CLAIMS

1. A system for treating water in an aqueous system comprising:

a species-specific sensor disposed to measure a halogen species concentration of water in the aqueous system;

an oxidation-reduction potential sensor disposed to measure an oxidation-reduction potential of the water; and

a controller in communication with the species-specific sensor and the oxidation-reduction potential sensor and with a halogen donor source and a peroxygen source, the controller comprising an algorithm that regulates addition of a halogen donor species based on the halogen species concentration and addition of a peroxygen compound based on the oxidation-reduction potential.

2. A system for treating water in an aqueous system comprising a controller in communication with a species-specific sensor disposed to measure a first oxidizer concentration of a first oxidizer in the aqueous system, a second sensor disposed to measure an overall oxidation reduction potential of the aqueous system, a first oxidizer source disposed to introduce the first oxidizer into the aqueous system, and a second oxidizer source disposed to introduce the second oxidizer into the aqueous system, the controller comprising an algorithm that analyzes the first oxidizer concentration and the second oxidizer concentrations and regulates addition of the first oxidizer based on the first oxidizer concentration and addition of the second oxidizer based on the second oxidizer concentration.

3. A method of treating water in an aqueous system comprising:

measuring a first oxidizer concentration of a specific oxidizer in water in the aqueous system;

determining a first oxidizer demand according a difference between the measured first oxidizer concentration and a target first oxidizer concentration;

controlling addition of the specific oxidizer to the aqueous system based on the first oxidizer demand; and

controlling addition of a second oxidizer to the aqueous system based on an oxidation reduction potential of water in the aqueous system.

4. The method of claim 3, wherein the step of controlling addition of the second oxidizer is further based on the first oxidizer demand.

5. The method of claim 3, wherein the specific oxidizer comprises a halogen donor.

6. The method of claim 5, wherein the second oxidizer comprises a peroxygen compound.